acid group which are required in large amounts for cell repair, and that it is only the commoner amino-acids which are not required in the amount usually taken, and which are consequently so rapidly discharged from the body.

This example of the manner in which the puzzles of metabolism are grappled with will be sufficient to show the character of the book, and one hopes that those interested in these fundamental questions will themselves study in full what a reviewer is only able to state imperfectly in barest outline or in samples.

W. D. H.

OUR BOOK SHELF.

Poverty and Hereditary Genius; a Criticism of Mr. Francis Galton's Theory of Hereditary Genius. By F. C. Constable. Pp. xvi+149. (London: Arthur C. Fifield, 1905.) Price 2*s.* net.

THE criticism which Mr. Constable brings forward in this book is that reputation is not a test of ability, and as Galton's theory of hereditary genius is based on this assumption, it has to be discarded. The statistical evidence given in "Hereditary Genius" has to be explained away, and Mr. Constable attempts to do this by what he calls the "swamping effect of poverty." We quite agree with Mr. Constable that it is harder for a poor man with uninfluential parents to achieve success as a judge than for a rich one with influence, but this does not seem to us to justify Mr. Constable in discarding the conclusions of "Hereditary Genius," for if the social conditions of both parents and offspring are relatively about the same, it seems as if the omission of the ability in poverty-stricken parents and their children is rather like leaving out of account the addition of numbers to both the numerator and denominator of a fraction. The omission may therefore not affect the result at all, and whether fuller statistical evidence should modify Mr. Galton's conclusions is a matter which can only be decided by statistics other than those which Mr. Constable discusses. He appears, however, to have overlooked altogether in his argument that other statistics exist and tend to show that psychical and physical characteristics are inherited in the same way, a point which seems to us to upset a good deal of Mr. Constable's criticism.

Mr. Constable does not refer to Mr. Galton's other books, and apparently quotes from the 1869 edition of "Hereditary Genius." It is a pity that Mr. Constable does not always succeed in expressing himself very clearly, and his habit of putting his arguments in the form of questions becomes somewhat tiresome, and makes the book seem a rather disjointed composition.

Modern Cosmogonies. By Agnes M. Clerke. Pp. vi+287. (London: A. and C. Black.) Price 3*s.* 6*d.* net.

THIS popular account of the structure of the universe, so far as it can be understood with the means of inquiry now at the disposal of astronomers, should serve a useful purpose in directing attention to the position of the most difficult problem of celestial science. To early philosophers it was sufficient to regard the heavens as a solid and crystalline firmament in which the stars are fixed; facts of observation were not considered essential for the metaphysical foundation upon which the great minds of antiquity sought to support their universe. The ingenious framework of solid concentric spheres and epicyclic motions was shown to be a baseless fabric by Tycho Brahe's considerations of the orbits of comets, and was finally discredited by the law of gravitation.

What may be regarded as the modern era of scientific cosmogony, in which serious attempts were made to explain what is seen on the background of space, opened about a century and a half ago with Wright's "cloven disc" theory of the Milky Way and Lambert's view of it as a sidereal ecliptic. These considerations of the nature of the universe are related to those of its origin adumbrated by Swedenborg and Kant as the nebular hypothesis, and afterwards worked out in mathematical detail by Laplace. During the past few years several objections of a mathematical and physical nature have been raised to this hypothesis, which has proved to be vulnerable at many points. In Miss Clerke's words, "It has, indeed, become abundantly clear that the series of operations described by Laplace could scarcely, under the most favourable circumstances, have been accomplished, and in a thin nebulous medium would have been entirely impossible. The nebular cosmogony has not, then, stood 'Foursquare to all the winds that blew.' Its towers and battlements have crumbled before the storms of adverse criticism. It survives only as a wreck, its distinctive features obliterated, although with the old flag still flying on the keep."

Tidal evolution, the meteoritic hypothesis, and other views developed in recent years to satisfy the demand for a cosmogony consistent with existing knowledge of the heavens, particularly with spectroscopic observations, are described by Miss Clerke. While we cannot subscribe to all her judgments and interpretations, her work contains a large amount of material, both observational and speculative, and general readers will find much to interest them in it.

R. A. G.

The Geometry of the Screw Propeller. By W. J. Goudie. Pp. 47. (London and Glasgow: Blackie and Son, Ltd.) Price 1*s.* 6*d.* net.

THIS is a small book presenting "a simple exposition of the geometrical principles connected with the screw propeller, and illustrating the various ways in which these may be applied to obtain a correct delineation of the propeller on paper, in the drawing office, and in the foundry." It is intended principally for the use of engineering students in technical schools, but is likely to prove useful in other directions, since it contains a clear and admirably illustrated account of the geometry of screw propellers.

The writer is a lecturer on mechanical engineering in Paisley Technical College, and possesses a good knowledge of workshop practice in addition to thorough familiarity with the geometry of his subject. He does not attempt any discussion of the design of a screw propeller most suitable for a new ship, but restricts attention to the preparation of drawings, patterns, and moulds required in the manufacture of propellers for which the dimensions and forms have been determined. This is a wise discretion, for while the geometry of screw propellers admits of exact treatment, the selection of the most efficient propeller for an individual steamship is even now a matter not admitting of exact scientific treatment when precedent has to be departed from; experiments alone can be trusted.

Mr. Goudie describes in clear and simple language the methods by which helical surfaces of uniform or variable pitch may be constructed, and illustrates in detail the practical methods of moulding the blades in the foundry. For the benefit of students who may not have the opportunity of actual work in the foundry the author indicates how, with the aid of a few simple tools and materials, skeleton models of the various

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types of screw surfaces can be constructed. He also gives detailed explanations of the work requiring to be done in the drawing office of an engine factory in connection with the design of screw propellers. While securing sufficient accuracy for all practical purposes, he shows how approximate methods may be substituted in many cases for exact geometrical methods.

The little book may well be placed in the hands of all engineering draughtsmen and apprentices whose training includes attendance at technical schools, as well as workshop practice.

Geographical Gleanings. By Rev. F. R. Burrows. Pp. 75. (London: G. Philip and Son, Ltd., 1906.) Price 1s. 6*d*. net.

Much yet remains to be done before geography is taught and studied in schools according to reasonable methods. Everybody agrees that geography, like most other subjects, can be made a valuable educational instrument provided that it is taught by practical methods and that the teachers are familiar with its realities. Mr. Burrows describes some methods of teaching geography, and shows how the subject may be usefully approached. There is little new in his views or advice; nevertheless, the book may serve to place aspiring teachers in a position to give satisfactory lessons in geography.

LETTERS TO THE EDITOR.

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of* Nature. *No notice is taken of anonymous communications.*]

Chinese Observation of Nature.

I am venturing to send you two quotations from "L'Empire Chinois," by M. Huc.

(I) Refers to an instance of mutation, and seems to me to be markedly interesting on account of the date of the observation recorded, and the use made of the discovery.

(II) Refers to a different matter—*Polype vinaigre.* Possibly this creature is well known to scientific workers, but I have failed to identify it, although I have searched all reference books at hand. Unfortunately, we have no scientific reference library, and I venture to hope that a reader of Nature will tell us what it is!

W. Hoskyns-Abrahall.

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I.

Les Chinois doivent principalement à leur caractère éminemment observateur leurs nombreuses découvertes en agriculture, et le parti qu'ils savent tirer d'une foule de plantes négligées en Europe. Ils aiment à examiner et à étudier la nature. Les grands, les empereurs même, ne dédaignent pas d'être attentifs aux plus petites choses, et ils recueillent avec soin tout ce qui peut avoir quelque utilité pour le public. Le célèbre empereur Khang a ainsi rendu plus d'un service important à son pays. On trouve dans de curieux mémoires écrits par ce prince, le passage suivant:

"Je me promenais, dit l'Empereur Khang-hi, le premier jour de la sixième lune, dans des champs où l'on avait semé du riz qui ne devait donner sa moisson jusqu'à la neuvième. Je remarquai, par hasard, un pied de riz qui était déjà monté en épi. Il s'élevait au-dessus de tous les autres et était assez mûr pour être cueilli; je me le fis apporter. Le grain en était très-beau et bien nourri; cela me donna la pensée de le garder pour un essai, et voir si, l'année suivante, il conserverait ainsi sa précocité; il la conserva en effet. Tous les pieds qui en étaient provenus montèrent en épis avant le temps ordinaire, et donnèrent leur moisson à la sixième lune. Chaque année a multiplié la récolte de la précédente, et, depuis trente ans, c'est le riz qu'on sert sur ma table. Le grain en est allongé et la couleur un peu rougeâtre; mais il est d'un parfum fort doux et d'une saveur très-agréable. On le nomme *Yu-mi*, 'riz impérial,' parce-que c'est dans mes jardins qu'il a commencé à être cultivé. C'est le seul qui puisse mûrir au nord de la grande muraille, où les froids finissent très-tard et commencent de fort bonne heure; mais, dans les provinces du midi, où le climat est plus doux et la terre plus fertile, on peut aisément en avoir deux moissons par an, et c'est une bien douce consolation pour moi que d'avoir procuré cet avantage à mes peuples."

L'Empereur Khang-hi a rendu, en effet, un service immense aux populations de la Mantchourie, en propageant la culture de cette nouvelle espèce de riz, qui vient à merveille dans des pays secs, sans avoir besoin d'irrigations perpétuelles comme le riz ordinaire.

Huc, "L'Empire Chinois," vol. ii., p. 359, second édition, 1854.

Kang-hi—1661–1721—"was indefatigable in administering the affairs of the empire, and at the same time he devoted much of his time to literary and scientific studies under the guidance of the Jesuits."

Article "China," "Encyclopædia Britannica," ninth edition.

II.

Polype vinaigre.

Le tsou-no-dze est un être qui, à raison de sa bizarre propriété de fabriquer d'excellent vinaigre, mérite une mention particulière. Ce polype est un monstreux assemblage de membranes charnues et gluantes, de tubes et d'une foule d'appendices informes qui lui donnent un aspect hideux et repoussant; on dirait une masse inerte et morte. Cependant, quand on la touche, elle se contracte ou se dilate, et se donne des formes diverses. C'est un animal vivant, dont la structure et l'existence ne sont pas plus connues que celles des autres polypes. Le tsou-no-dze a été découvert dans la mer Jaune, et les Chinois le pêchent sur les côtes du Leao-tong; mais on n'en prend qu'un petit nombre. Peut-être sont-ils plus abondants ailleurs, où l'on néglige de les prendre faute de connaître leur propriété. On place ce polype dans un grand vase rempli d'eau douce à laquelle on ajoute quelques verres d'eau-de-vie. Après vingt ou trente jours, ce liquide se trouve transformé en excellent vinaigre, sans qu'il soit besoin de lui faire subir aucune manipulation, ni d'y ajouter le moindre ingrédient. Ce vinaigre est clair comme de l'eau de roche, d'une grande force et d'un goût très-agréable. Cette première transformation une fois terminée, la source est intarissable; car, à mesure qu'on en tire pour la consommation, on n'a qu'à ajouter une égale quantité d'eau pure, sans addition d'eau de vie. Le tsou-no-dze, comme les autres polypes, se multiplie facilement par bourgeons, c'est-à-dire qu'il suffit d'en détacher un membre, un appendice, qui végète, en quelque sorte, grossit en peu de temps et jouit également de la propriété de changer l'eau en vinaigre. Ces détails ne sont pas uniquement basés sur les renseignements que nous avons pu recueillir dans nos voyages. Nous avons possédé nous-mêmes un de ces polypes; nous l'avons gardé pendant un an, faisant usage journellement du délicieux vinaigre qu'il nous distillait. Lors de notre départ pour le Thibet, nous le laissâmes en héritage aux chrétiens de notre mission de la vallée des Eaux-Noires.

"L'Empire Chinois," Huc, vol. ii., chap. x., pp. 414–415.

A Large Meteor.

On Sunday, August 5, at 10h. 33m., I saw what I presume to have been a fine and rather early Perseid. It crossed the star λ Aquilæ, and the flight was recorded from about $287\frac{1}{2}^\circ - 2^\circ$ to $282^\circ - 9\frac{1}{2}^\circ$. The meteor was much brighter than Venus, and left a streak of 5° visible for some twenty seconds, though the full moon was shining brilliantly at the time.

I would be much interested in hearing of any other observations of this meteor. It was probably situated over the English Channel, and must have presented a magnificent appearance as seen from the counties of Somerset, Dorset, and Devon.

W. F. Denning.

44 Egerton Road, Bishopston, Bristol, August 6.

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